

## HIV /AIDS

### =Abstract=

#### Epidemiologic and clinical features of HIV infection/AIDS in Koreans

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**Background :** The epidemiologic and clinical features of HIV infection/AIDS are different among various races, regions, and countries. To determine the epidemiologic and clinical characteristics of HIV infection in Korea, we analyzed and compared with that of other populations.

**Methods :** Medical records of 176 HIV-infected persons in Severance Hospital of Yonsei University College of Medicine and Hospital of Pusan University College of Medicine from year 1985 to 2000 were reviewed retrospectively.

**Results :** One hundred and seventy six patients were analyzed among which 156 (88.6%) were male and 20 (11.4%) were female with a male to female ratio of 7.8:1. At the time of diagnosis, the age distribution was 78 cases (44.3%) in the thirties, 44 cases (25.0%) in the twenties, and 35 cases (19.9%) in the forties, and the mean age was  $35.9 \pm 9.3$ . Heterosexual contact was the most frequent transmission route (92 cases, 52.3%), and 42 cases (23.9%) were transmitted by homosexual contact. At initial visit, asymptomatic HIV infection constituted 75 cases (42.6%), and AIDS 72 cases (40.9%). At initial visit, mean value of CD4+ lymphocyte counts was 252/mm<sup>3</sup> and HIV RNA 226,035 copies/mm<sup>3</sup>. One hundred and twenty one of 176 patients developed 317 cases of opportunistic diseases. At the diagnosis of HIV-related opportunistic diseases, mean CD4+ lymphocyte count was 140/mm<sup>3</sup> and mean HIV RNA 347,403 copies/mm<sup>3</sup>. Candidiasis (50 cases, 28.4%) was the most frequent opportunistic disease followed by *pneumocystis carinii* pneumonia (PCP) (37 cases, 21.0%), tuberculosis (29 cases, 16.5%), cytomegalovirus (CMV) infection (21 cases, 11.9%), HIV encephalopathy (9 cases, 5.1%), and herpes zoster (9 cases, 5.1%). There were 3 cases (1.7%) of malignant lymphoma and 2 cases (1.1%) of Kaposi's sarcoma. At the diagnosis of opportunistic diseases, mean CD4+ lymphocyte counts of patients with candidiasis was 71/mm<sup>3</sup>, PCP 63/mm<sup>3</sup>, and tuberculosis 142/mm<sup>3</sup>, and the mean HIV RNA level was 338,474 copies/mm<sup>3</sup>, 281,967 copies/mm<sup>3</sup>, and 817,012 copies/mm<sup>3</sup> respectively. Among the 317 opportunistic diseases, AIDS-defining diseases were 150 cases (47.3%), of which PCP was 37 cases (24.7%), tuberculosis 29 cases (19.3%), CMV

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infection 21 cases (14.0%), HIV wasting syndrome 15 cases (10.0%), and esophageal candidiasis 14 cases (9.3%). The earliest AIDS-defining diseases to manifest in AIDS patients were tuberculosis (25 cases, 33.3%), followed by PCP (17 cases, 22.6%), esophageal candidiasis (14 cases, 18.7%), CMV infection (5 cases, 6.6%), and HIV wasting syndrome (4 cases, 5.3%). Thirty five (19.9%) of 176 patients were died. The common causes of death were tuberculosis (9 cases, 25.7%), PCP (9 cases, 25.7%), bacterial pneumonia (7 cases, 20.0%) and HIV encephalopathy (3 cases, 8.5%).

**Conclusion :** The epidemiologic and clinical features of HIV infection/AIDS in Korea are different from that of developing countries such as Southeast Asia and Africa as well as from that of developed countries.(Korean J Med 61:355-364, 2001)

**Key Words :** HIV; HIV infection; AIDS; Epidemiology; Clinical feature; Korea

1985 2000 4

HIV

Human immunodeficiency virus ( HIV)

1981 가 가 가 가 176 ( 가 4,000 118 , 58 )

가

HIV HIV , 2.

VDRL FTA-ABS, hepatitis viral markers, CMV IgM IgG, Toxoplasma IgM IgG

가, , 가 2-5) CD4+

1985 HIV 6) %, 2MG, HIV RNA , HIV P24 Ag, 1,280 가 가 2000 12 ). RNA 1997

10

가 , 1 , 3

HIV AIDS (acquired immune deficiency (T-cell subsets)

syndrome) , (HIV RNA)

Multi-CMI skin test

HIV /AIDS , 2MG EIA (Cobascore II, Swiss)

가 CD4+ (Becton Dickinson, USA)

CD4+

1. HIV RNA RT-PCR (Roche, USA)

HIV 가 AIDS HIV

AIDS  
for Disease Control & Prevention; CDC) 1993  
7).

1.  
176 HIV 가 156 (88.6%),  
가 20 (11.4%) , 7.8:1 HIV  
10 1 (0.6%), 20 가  
44 (25.0%), 30 가 78 (44.3%), 40 가 35  
(19.9%) , 50 18 (10.2%) .  
35.9±9.3 .  
92 (52.3%) 가  
42 (23.9%),  
4 (2.3%),  
2 (1.1%), 36 (20.5%) .  
HIV HIV  
75 (42.6%), AIDS  
HIV 29 (16.5%), AIDS  
AIDS 가 72 (40.9%) ( 1).  
가 53 (30.1%) 가 ,  
24 (13.6%), 16 (9.1%),  
11 (6.3%), 10  
(5.7%), 6 (3.4%),  
8 (4.5%), 가 48  
(27.3%) .  
2.  
CD4+ %가  
252/mm<sup>3</sup> 14.8% (167), HIV  
RNA 226,035 copies/mm<sup>3</sup> (72  
) . 2MG 3.1 mg/L (118  
) , multi- CMI skin test 98% anergy  
(41 ) ( 1).  
HIV 68.8% 121 317 가  
39.7±9.3  
HIV 19.9

CD4+ 140/  
3.6 mg/L, HIV RNA  
347,403 copies/mm<sup>3</sup> .  
50 (28.4%)  
가 , 37 (21.0%),  
30 (17.0%), 29 (16.5%), 22

**Table 1. Characteristics of 176 HIV -infected persons at presentation**

Demographic Characteristics	No. of Cases
Sex	
Male	156 (88.6%)
Female	20 (11.4%)
M : F	7.8 : 1
Age	
Mean	35.9±9.3 yrs
< 19 yr	1 ( 0.6%)
20-29 yr	44 (25.0%)
30-39 yr	78 (44.3%)
40-49 yr	35 (19.9%)
> 50 yr	18 (10.2%)
Route of transmission	
Heterosexual contact	92 (52.3%)
Homosexual contact	42 (23.9%)
Transfusion/Blood products	4 ( 2.3%)
IV drug use	2 ( 1.1%)
Undetermined	36 (20.5%)
State of HIV infection	
Asymptomatic HIV infection	75 (42.6%)
Symptomatic HIV infection	29 (16.5%)
AIDS	72 (40.9%)
Immunologic & Virologic Status	Mean Value
CD4+ lymphocyte count (n=167)	252/mm <sup>3</sup>
CD4+ lymphocyte % (n=167)	14.8 %
HIV RNA (n=72)	226,035 copies/mm <sup>3</sup>
2 MG (n=118)	3.1 mg/L
Laboratory Findings	Positive Rate (%)
HBs Ag (n=114)	8.8
Anti-HCV Ab (n=64)	3.1
VDRL (n=99)	11.1
FTA-ABS (n=76)	17.1
CMV-IgM (n=51)	12.0
Toxoplasma IgM (n=29)	0.0
Anergy in Multi-CMI skin test (n=41)	98.0
HCV; hepatitis C virus, CMV; cytomegalovirus, CMI; cell-mediated immunity	

(12.5%), 21 (11.9%), HIV 3 (1.7%),  
 15 (8.5%), 11 (6.3%), HIV 2 (1.1%), 1 (0.6%), 1  
 9 (5.1%), 9 (5.1%) . (0.6%), 1 (0.6%)

**Table 2. Opportunistic diseases of 121 HIV-infected persons (n=317)**

Opportunistic Diseases	No. of Cases (%)	Mean CD4+ Cell Count (/mm <sup>3</sup> )	Mean HIV RNA (copies/mm <sup>3</sup> )	Mean $\alpha$ MG (mg/L)
Candidiasis	50(28.4)	71	338,474	3.6
Oral	36(20.5)	77	415,274	3.5
Esophageal	14( 7.9)	57	141,000	3.7
PCP	37(21.0)	63	281,967	3.2
Oral hairy leukoplakia	30(17.0)	206	236,295	3.2
Tuberculosis	29(16.5)	142	817,012	3.7
Pulmonary	18(10.2)	162	833,158	3.1
Extrapulmonary	11( 6.3)	89	807,786	5.1
Folliculitis	22(12.5)	186	345,896	3.2
CMV infection	21(11.9)	32	204,093	4.1
Retinitis	15( 8.5)	28	-	3.7
Other infections*	6( 3.4)	37	204,093	4.4
HIV wasting syndrome	15( 8.5)	67	139,890	3.9
Dermatophytosis	11( 6.3)	254	355,789	4.5
HIV encephalopathy	9( 5.1)	80	798,552	3.8
Herpes zoster	9( 5.1)	247	46,191	3.1
Peripheral neuropathy	8( 4.5)	79	24,701	4.1
Seborrheic dermatitis	7( 4.0)	120	136,641	3.3
Atypical mycobacterial infection	6( 3.4)	51	182,630	4.7
Syphilis	6( 3.4)	604	239,742	3.4
Cryptococcal meningitis	4( 2.3)	88	-	2.2
HIV myopathy	3( 1.7)	109	-	3.7
HSV, chronic ulcer	3( 1.7)	80	144,364	3.4
Toxoplasmosis, brain	3( 1.7)	21	-	4.9
Malignant lymphoma	3( 1.7)	46	1,422	5.4
Abscess	3( 1.7)	236	261,724	2.6
Kaposi's sarcoma	2( 1.1)	198	541,913	3.7
PML	2( 1.1)	183	254,297	3.7
Acute pancreatitis	2( 1.1)	27	260,000	2.9
Periodontitis	2( 1.1)	63	19,097	3.0
Molluscum contagiosum	2( 1.1)	35	51,442	2.6
Cervical cancer	1( 0.6)	266	17,742	3.4
Eccrine gland cancer	1( 0.6)	374	-	5.2
Spinal myelopathy	1( 0.6)	272	-	2.7
Rectal cancer	1( 0.6)	56	-	2.8
Clonorchiasis	1( 0.6)	50	1,422	7.8
Neurocysticercosis	1( 0.6)	3	-	-

PCP, pneumocystis carinii pneumonia; CMV, cytomegalovirus; HSV, herpes simplex virus; PML, progressive multifocal leukoencephalopathy; \*, lung, esophagus, stomach, & colon infections, -, not done

**Table 3. AIDS-defining opportunistic diseases in 75 AIDS patients (n=150)**

Opportunistic Diseases	No. of Cases (%)	Mean CD4+ Cell Count (/mm <sup>3</sup> )	Mean HIV RNA (copies/mm <sup>3</sup> )	Mean $\gamma$ MG (mg/L)
PCP	37 (24.7)	63	281,967	3.2
Tuberculosis	29 (19.3)	142	817,012	3.7
Pulmonary	18 (12.0)	162	833,158	3.1
Extrapulmonary	11 ( 7.3)	89	807,786	5.1
CMV infection	21 (14.0)	32	204,093	4.1
Retinitis	15 (10.0)	28	-	3.7
Other infections*	6 ( 4.0)	37	204,093	4.4
HIV wasting syndrome	15 (10.0)	67	139,890	3.9
Esophageal candidiasis	14 ( 9.3)	57	141,000	3.7
HIV encephalopathy	9 ( 6.0)	80	798,552	3.8
Atypical mycobacterial infection	6 ( 4.0)	51	182,630	4.7
Cryptococcal meningitis	4 ( 2.7)	88	-	2.2
HSV, chronic ulcer	3 ( 2.0)	80	144,364	3.4
Toxoplasmosis, brain	3 ( 2.0)	21	-	4.9
Malignant lymphoma	3 ( 2.0)	46	1,422	5.4
Kaposi's sarcoma	2 ( 1.3)	198	541,913	3.7
PML	2 ( 1.3)	183	254,297	3.7
Cervical cancer	1 ( 0.7)	266	17,742	3.4

PCP, pneumocystis carinii pneumonia; CMV, cytomegalovirus; HSV, herpes simplex virus; PML, progressive multifocal leukoencephalopathy; \*, lung, esophagus, stomach, & colon infections, -, not done

( 2). HIV  
 $27.6 \pm 28.9$   
 $22.4 \pm 24.7$ ,  $18.7 \pm 30.6$   
 $33.6 \pm 26.5$   
CD4+  
 $71/\text{mm}^3$ ,  $63/\text{mm}^3$ ,  $142/\text{mm}^3$ ,  
 $32/\text{mm}^3$ ,  
 $51/\text{mm}^3$ ,  $46/\text{mm}^3$   
HIV RNA  $338,474$  copies/ $\text{mm}^3$ ,  
 $281,967$  copies/ $\text{mm}^3$ ,  $817,012$   
copies/ $\text{mm}^3$ ,  $204,093$  copies/  
 $\text{mm}^3$ , HIV  $798.552$  copies/ $\text{mm}^3$ ,  
 $541,913$  copies/ $\text{mm}^3$  ( 2).  
317 AIDS 150  
47.3% . AIDS  
37 (24.7%) 가, 29  
(19.3%), 21 (14.0%),  
HIV 15 (10.0%), 14  
(9.3%), HIV 9 (6.0%) ( 3).

**Table 4. Initial AIDS-defining opportunistic diseases in 75 AIDS patients (n=75)**

Opportunistic Diseases	No. of Cases (%)
Tuberculosis	25 (33.3)
Pulmonary	17 (22.7)
Extrapulmonary	8 (10.6)
PCP	17 (22.7)
Esophageal candidiasis	14 (18.7)
CMV infection	5 ( 6.6)
CMV retinitis	3 ( 4.0)
CMV enterocolitis	2 ( 2.6)
HIV wasting syndrome	4 ( 5.3)
Atypical mycobacterial infection	2 ( 2.6)
HIV encephalopathy	2 ( 2.6)
Cryptococcal meningitis	2 ( 2.6)
Malignant lymphoma	1 ( 1.3)
Kaposi's sarcoma	1 ( 1.3)
HSV, chronic ulcer	1 ( 1.3)

PCP, pneumocystis carinii pneumonia; CMV, cytomegalovirus; HSV, herpes simplex virus

AIDS 가 AIDS  
25 (33.3%), 17 (22.6%),  
14 (18.7%), 5 40%  
(6.6%), HIV 4 (5.3%) 가 <sup>10)</sup>  
( 4). 가 가 ,  
176 HIV 35 (19.9%) 1/3  
9 . 1998 <sup>14)</sup>  
(25.7%) 가 , 7 62%, 31%  
(20.0%), HIV 3 (8.5%), 2  
(5.7%), 2 (5.7%) ( 5).

**Table 5. Causes of death in 35 expired HIV -infected persons (n=35)**

Cause of Death	No. of Cases (%)
Tuberculosis	9 (25.7)
Pulmonary	6 (17.1)
Extrapulmonary	3 ( 8.6)
PCP	9 (25.7)
Bacterial pneumonia	7 (20.0)
HIV encephalopathy	3 ( 8.5)
Cryptococcal meningitis	2 ( 5.7)
Malignant lymphoma	2 ( 5.7)
Sepsis	1 ( 2.9)
Toxoplasmosis, brain	1 ( 2.9)
Myocardial infarction	1 ( 2.9)

PCP, pneumocystis carinii pneumonia

HIV  
, ,  
(47%),  
(25%), (10%) ,  
13 86% 가 HIV  
<sup>8)</sup> (64.6%),  
(14.9%), (8.8%)  
<sup>9)</sup> (22.6%), HIV  
<sup>10)</sup> (20.6%)  
(81.2%), (5.3%),  
(5.1%) <sup>11-13)</sup> ,  
(31-61%)

.  
가 가 ,  
1998 <sup>14)</sup> 62%, 31%  
가 ,  
2 가  
가  
HIV 15  
HIV  
가 가  
AIDS 가 40.9%  
CD4+ 252/mm<sup>3</sup>  
가  
HIV  
AIDS  
<sup>8)</sup> ,  
AIDS (68.7%)가 <sup>12)</sup>  
HIV  
HIV  
CD4+ 가  
,  
HIV  
1999  
(53.0%),  
(24.4%),  
(20.8%),  
가  
<sup>15)</sup>  
<sup>16)</sup>

가 가 , (14-38%), 10% .  
 (11-35%), (13-33%)  
 , 가 ,  
 (penicilliosis) 4-25% , 가  
 5, 12, 15) , (56%) 가  
 , , 가 50% ,  
 가 , 2000 HIV 가 HIV  
 (41%), (34%), (19%),  
 (16%), (13%), 가<sup>21)</sup>  
 (13%) ,  
 4, 17, 18) 29 , 18  
 가 , (10.2%), 11 (6.3%) .<sup>14)</sup>  
 , HIV AIDS , AIDS 1/3  
 14) AIDS  
 , 가 CD4+ 142/mm<sup>3</sup> , HIV  
 가 RNA 817,012 copies/mm<sup>3</sup> .  
 , 가 34%  
 , 66% HIV  
 , 176 24  
 , 10 (42%) HIV  
 가 HIV  
 HIV 5 - 160 가  
 , HIV  
 AIDS 가 가<sup>19, 20)</sup> 가<sup>22, 23)</sup>  
 36 (20.5%),  
 14 (7.9%)가 ,  
 AIDS , CD4+ %, HIV RNA ,  
 CD4+ 77/mm<sup>3</sup> , HIV  
 57/mm<sup>3</sup> AIDS  
 79/mm<sup>3</sup> , HIV RNA  
 338,474 copies/mm<sup>3</sup> HIV 6 (3.4%)  
 , 4 가 , 2 가  
 가 가 AIDS  
 CD4+ 51/mm<sup>3</sup> ,  
 CD4+  
 63/mm<sup>3</sup> , HIV RNA 281,967 copies/mm<sup>3</sup>  
 HIV  
 14) 21 (11.9%)  
 25% 가 , AIDS

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90% 1997 HIV 가

24) 15 27) HIV /AIDS

71.4% 가 , , HIV /AIDS

CD4+ 100/mm<sup>3</sup> , , 가

32/mm<sup>3</sup> , HIV 가

HIV 30% HIV (HIV HIV /AIDS ,

encephalopathy; AIDS dementia) , 가

5.1% , 가

CD4+ 80/mm<sup>3</sup>, HIV RNA 798,552 HIV

copies/mm<sup>3</sup> : HIV /AIDS 가,

HIV /AIDS

HIV , 가 HIV /AIDS

AIDS 가, : 1985 2000 4

( ) 176 HIV

가 35.2% 12) ,

(18- 26%), (5- 15%) : 176 가 156 (88.6%),

4) , 가 20 (11.4%) 7.8:1

30 가 78 (44.3%), 20 44 (25.0%), 40

35 (19.9%) , 35.9 ± 9.3

92 (52.3%),

HIV 10 AIDS 42 (23.9%)

가 HIV 75 (42.6%), AIDS 가 72

가 (40.9%) CD4+ 252/mm<sup>3</sup>

1995 26.1% , HIV RNA 226,035 copies/mm<sup>3</sup>

1998 8.5% , 176 121 317

가 AIDS 150 47.3%

25) 50 (28.4%) 가

1 1992 10% , 37 (21.0%), 29

1996 52% 가 (16.5%), 21 (11.9%)

26) CD4+

HIV 19.9%가 , 71/mm<sup>3</sup>, 63/mm<sup>3</sup>, 142/mm<sup>3</sup>

HIV RNA 338,474



copies/mm<sup>3</sup>, 281,967 copies/mm<sup>3</sup>,  
817,012 copies/mm<sup>3</sup> . AIDS 가  
AIDS (25 , 33.3%)  
, 17 (22.6%),  
14 (18.7%) . 176 35  
(19.9%)

9 (25.7%) 가  
: HIV /AIDS

가 가

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